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CORRELATION BETWEEN CARBON CAPTURE AND STORAGE WITH ENHANCED OIL RECOVERY FOR GOOD ENVIROMENT

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ABSTRACT

Indonesia has a lot of potential oil and gas, from all wells contained at least 125 oil fields. Crude oil production process produces CO_2 emission which can increase pollution in the atmosphere. CO2 emission in the atmosphere can be reduced with CCS or *Carbon Capture and Storage*. CCS is an application to reduce CO2 emission and greenhouse effect. CCS is a useful application of technology to reduce CO_2 emissions in the atmosphere. CO_2 injected into the injection wells to push oil trapped productive wells. CCS consists of three main stages: (1) capturing process of CO2 from its sources; (2) transporting the compressed CO2 through pipes, trucks, and ships; (3) storage stage or storing CO2 which is injected into subsurface rock formation or using unproductive wells. CO_2 produced in the combustion process can be used in Enhanced Oil Recovery (EOR). EOR is a technology used to increase oil production in oil field production decreased. EOR itself, consists of several processes including all methods that use energy sources and other useful materials to increase oil production that are no longer manufactured, economically. EOR consists of 4 main methods that waterflooding, Thermal Methods, Chemical Methods, and miscible Methods.

In injection process, CO2 can be monitored in post-injection using Microgravity Method to prevent leakage and groundwater pollution, and to know density difference from each layer regularly. Based on the result of literature study about CCS and EOR, so that this method is very proper to be applied in Indonesia. Especially with the presence of refinery which produce CO2 emission and the presence of old wells which can be used as storage place. It is expected as way to decrease environmental impacts and to increase hydrocarbon productivity.

Keywords: Carbon, Recovery, Microgravity.

INTRODUCTION

Indonesia has a lot of oil and gas potency, from all wells contained at least 125 oil fields (NN, TTKI). Crude oil production process produces CO_2 emission which can increase pollution in the atmosphere. Indonesia, according to the Kyoto Protocol convention belong to a group or country that is not a full obligation to reduce emissions (non-Annex-1). But based on the progress of negotiations since COP-13 in Bali in 2007 agreed that Member States will undertake a significant reduction in CO_2 emissions , other than that according to the Major economies Forum (MEF) also agreed to keep the rise in the earth's average temperature not exceeding 20 C in 2050 and is based on an agreement that developed countries should reduce CO_2 emissions by 85% from baseline in 1990 and states developing which includes Indonesia as much as 50% of BaU by 2050 and means that Indonesia is now also play a role in reducing CO_2 emissions (ESDM 2009).

Several ways to reduce CO_2 pollution, one of them is by applying the method of Carbon Capture and Storage (CCS). CCS is a useful application of technology to reduce CO_2 emissions in the atmosphere and can reduce the greenhouse effect. CCS consists of three main stages ranging from the separation and capture of CO_2 to save it into a shelter (Geologic Formations) for a very long time. CCS is being widely used by developed countries that implement clean energy technologies (Clean Energy Technologies) in various aspects of life. Specifically in Indonesia, the application of CCS has three main points to note are the presence of a significant source of CO_2, where appropriate storage and can meet the economic and political criteria. The first is a significant source of CO_2 that can be taken from

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